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ABSTRACT

The module described in this document is part of a series of instructional modules on sex-role stereotyping in education. This document (including all but the cassette tape) is the module that examines how sex bias influences selection of research topics, sampling techniques, interpretation of data, and conclusions. Suggestions for designing sex-fair research and tests are included. (Author/MLF)

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SEX BIAS IN RESEARCH AND MEASUREMENT:
A TYPE III ERROR

Patricia B. Campbell, Director

Project on Sex Stereotyping in Education
Red Bank, New Jersey

Women's Educational Equity Act Program
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Patricia Roberts Harris, Secretary

Mary F. Berry, Assistant Secretary for Education

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INSTRUCTIONS

The enclosed module on sex stereotyping in research and measurement is composed of a 25-minute tape, six transparency masters and three handouts with a bibliography. The module is designed so that it can be used independently or to supplement an existing instructional unit.

The module was developed to facilitate discussion as well as to present information. Several times during the tape the group is requested to stop the tape recorder and participate in an activity. It is suggested that at that time the instructor or group leader stop the tape recorder and initiate the activity. When the discussion of the activity appears to be winding down, the tape should be started again. The unit, with activities, should take between one and two hours. We strongly recommend that the instructor or group leader listen to the tape before using it and write down possible points to be shared with the group during the discussions. We think the module is a good one, but it is only as effective as your group discussion and participation make it.

There are six transparencies that go with the tape: 1) Sources of Bias in Testing, 2) Vocational Interest Inventories, 3) Females and Males in Achievement Tests, 4) Test Items, 5) Post Hoc Fallacy and 6) Bias Damages Research. At the appropriate time, each transparency is introduced on the tape; following this, there is a short pause to allow the transparency to be put on the overhead projector.

One activity involves the analysis of research articles. A sample of research articles (one article for every three participants works well) should be selected and distributed to the group.

Copies of the handouts should be made and distributed to members of the group prior to beginning the tape. Copies can be made by using any copying machine or by using a Thermofax machine to make ditto masters of the handout.

Transparencies can be made from the transparency masters by covering the master with a sheet of transparency film and running both the sheet and the master through a Thermofax machine.

This module is part of a series of instructional modules on sex-role stereotyping in education. Other modules are available in Math, Social Studies, Science, Physical Education, Human Growth and Development, Educational History, Language Arts, Special Education, Business Education, Fine Arts Education, Early Childhood Education, and Curriculum.

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HANDOUTS

EVALUATING RESEARCH FOR SEX BIAS

	Yes	No
1. Does the review of the literature cover possible sex differences that could influence the results? (For example, does a study on mental health make readers aware that psychologists and psychiatrists rate healthy men and healthy people similarly but rate healthy women and healthy people differently?)	____	____
2. Are the instruments used non-biased or are they biased in favor of one sex? (For example, do the contexts of items deal primarily with scientific, mechanical, business or mathematical areas that generally favor males; do they deal primarily with arts, humanities or an understanding of human relationships that generally favor females; or are they equally balanced between the two?)	____	____
3. If observers are used, are there attempts to control for observer sex bias that could affect the data collected? (For example, if the observers are viewing young children, are they not told what sex the children are; or have the observers been given any training on the effects sex bias may have on their data?)	____	____
4. Is the language of the study stereotyped? (For example, is the term "man" used to indicate both men and women; or is "he" used to indicate both he or she?)	____	____
5. Does the study examine possible sex differences in the data? (For example, if a study is being done of unequal numbers of females and males to determine if training affects creativity, has the creativity data been examined for sex differences and has an analysis been done on how this will affect the results?)	____	____
6. Based on the sample, are the generalizations appropriate or is the study overgeneralized? (For example, are results from single-sex samples generalized to both females and males?)	____	____
7. Are the conclusions based on the results, or are they based on the author's expectations? (For example, Coffman found that when males and females score equally well on tests of verbal abilities, the authors frequently conclude not that males and females have equal abilities in verbal areas, but rather that the samples are distorted.)	____	____
8. In a post hoc or ex post facto study, do the authors assume that sex is a causal factor? (For example, if a study finds that males have higher self-concepts than females; do the authors conclude that being male causes one to have a higher self-concept?)	____	____

EVALUATING TESTS FOR SEX BIAS *

	Yes	No
1. Are there approximately equal numbers of females and males in the items?		
2. Are males and females portrayed in a variety of roles and occupations, not just in stereotypic ways?		
3. Do test items include approximately equal numbers of questions whose topics cover areas traditionally considered of feminine interest and traditionally considered of masculine interest?		
4. If the answer to either 1, 2 or 3 is "no", has work been done to insure that these biases do not cause the scores of one sex to be inflated?		
5. Are the same norms used to assess the performance of males and females, rather than having one set of norms for females and another for males?		
6. If a test is recommended for use with females and males, have both sexes been used in the validity and reliability studies?		
7. If the test is used for selection, is the predictive validity equally good for females and males?		

* Adapted from "Sex Bias in Educational Testing" by Marlaine Lockheed. A paper presented at the International Symposium on Educational Testing, The Hague, July 1973. Used by permission.

WHAT YOU CAN DO

Our suggestions:

1. When reading research, evaluate it for possible sex bias in areas such as topic selection, sampling, generalizing and generating conclusions. Your handout, Evaluating Research for Sex Bias, has some guidelines you may want to use in your evaluation.

2. When doing your own research, be aware of the relevant data on sex differences and use research designs that minimize the effects of sex bias.

3. Evaluate the tests you are using for possible sex bias in item type, item content, validity and norms. Your handout, Evaluating Tests for Sex Bias, has some guidelines you may want to use in your research.

4. When developing your own tests, try to include equal numbers of females and males, in both traditional and nontraditional roles.

5. Don't use tests as the sole basis for decision making. Include a variety of methods including biographical and other self-report data. Be aware though that these other measures may also be biased.

6. Remember that newer tests are usually less biased than older tests. Check to see if the standardized test you are using has been revised and if so, use the newer test.

Your other ideas:

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* Particularly recommended

TRANSPARENCIES

SOURCES OF BIAS IN TESTING

I. The Society

II. The Test Content

III. The Use Of Test Results

VOCATIONAL INTEREST INVENTORIES

(PRIOR TO 1976)

FEMALE JOB OPTIONS	MALE JOB OPTIONS
Stewardess	Pilot
Nurse	Physician
Dental Assistant	Dentist
Executive Secretary	Business Executive
Housekeeper	Sales Manager

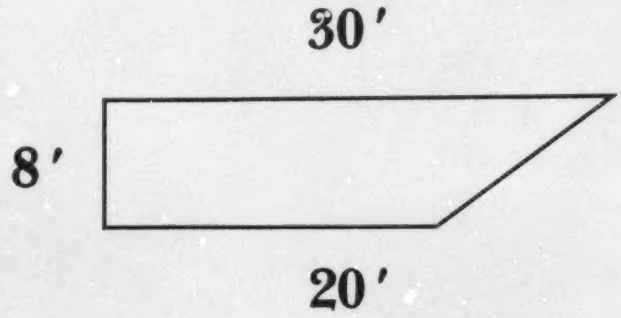
FEMALES AND MALES IN ACHIEVEMENT TESTS

	Males	Females
California Achievement Tests	74%	26%
Iowa Test Of Basic Skills	77%	23%
Stanford Achievement Test	72%	28%

TEST ITEMS

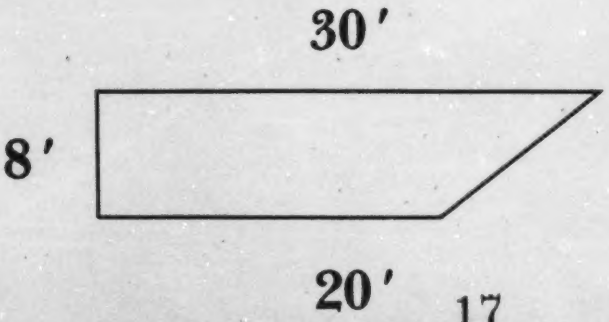
PROBLEM A

If each child must have 8.5 sq. ft. of floor space, how many children can attend a day care center with the following floor plan?



PROBLEM B

If each mechanic must have 8.5 sq. ft. of work space, how many mechanics can be employed in a garage with the following floor plan?



POST HOC FALLACY

If boys have higher self concepts than girls

then

being a boy causes one to have a higher self-concept

WHEN SEX BIASES INFLUENCE:

- the topic selection
- the sample selection and procedure
- the generalizations
- the interpretation of data

then

BIAS DAMAGES RESEARCH